

CLAIMS

What is claimed is:

1. An optical port tester for testing the optical quality of a port, the port tester comprising:

a base;

a fiber mount connected to the base, wherein the fiber mount supports a fiber assembly that is configured to securely hold a fiber cable, wherein the fiber assembly is mounted so as to slide along the fiber mount such that the fiber assembly can be latched into a connected position and retracted to a retracted position;

a mirror mount connected to the base, wherein the mirror mount holds a mirror assembly that includes an outer mirror guide that is fixed to the mirror mount and an inner mirror guide that slides within the outer mirror guide, wherein the outer mirror guide is configured to receive a port; and

a mirror connected to the inner mirror guide, wherein the mirror may be positioned at a test position in order to reflect a light signal through the port when a port is mounted in the port tester between the mirror assembly and a fiber cable held in the fiber assembly.

2. An optical port tester as defined in claim 1, further comprising a position control that is mounted to the base, wherein the position control is able to change a position of the mirror mounted to a test end of the inner mirror guide with respect to the lens of the port.

3. An optical port tester as defined in claim 2, wherein the position control is a micrometer.

4. An optical port tester as defined in claim 1, wherein the mirror assembly further comprises a resilient member that exerts a force against both the outer mirror guide and the position control such that the mirror is held in the test position until the position of the inner mirror guide is adjusted to a new test position by the position control.

5. An optical port tester as defined in claim 4, wherein the resilient member is a spring.

6. An optical port tester as defined in claim 1, wherein the outer mirror guide further comprises a wavelength plate mounted in the end of the outer mirror guide such that the wavelength plate is mounted between the mirror and the port lens.

7. An optical port tester as defined in claim 1, wherein the fiber assembly includes a catch that connects with a latch to secure the fiber assembly in the connected position.

8. An optical port tester as defined in claim 1, wherein the fiber assembly includes a fiber optic connector that secures a fiber cable in the fiber assembly.

9. An optical port tester for testing the optical quality of a lens that is an integral optical element of a port, the port tester comprising:

a base;

a fiber mount connected to the base;

a fiber assembly that is connected with the fiber mount such that the fiber assembly can slide between a connected position and a retracted position, wherein a catch connected to the fiber assembly connects with a latch to secure the fiber assembly in the connected position, wherein the lens of the port is tested when the fiber assembly is in the connected position;

a mirror mount connected to the base;

a mirror assembly mounted in the mirror mount, wherein the mirror assembly comprises:

an outer mirror guide that is fixed to the mirror mount;

an inner mirror guide that is slidably positioned within the outer mirror guide, wherein a mirror is connected to a test end of the inner mirror guide; and

a resilient member that exerts a force on the outer mirror guide and a lip of the inner mirror guide; and

a position control that pushes against the lip of the inner mirror guide to balance the force exerted by the resilient member, wherein adjusting the position control moves the mirror to a test position with respect to a lens of a port being tested in the port tester.

10. An optical port tester as defined in claim 9, wherein the fiber assembly hold a fiber cable that is connected with the port being tested in the port tester when the fiber assembly is in the connected position.

11. An optical port tester as defined in claim 10, wherein the position control is a micrometer.

12. An optical port tester as defined in claim 11, wherein the micrometer measures a distance between the mirror and the lens of the port being tested, wherein the micrometer adjusts the distance between the mirror and the lens of the port being tested.

13. An optical port tester as defined in claim 9, wherein the outer mirror guide further comprises a wavelength plate and a glass plate mounted in an end of the outer mirror guide such that the wavelength plate and the glass plate are between the mirror and the lens of the port being tested.

14. An optical port tester as defined in claim 9, wherein the resilient member ensures that the mirror is fixed in the test position until the position control adjusts the mirror to a new test position.

15. An optical port tester as defined in claim 9, wherein the resilient member is a spring.

16. In a system that includes one or more ports that have an integrated lens, wherein the optical quality of the lenses is not known, a method for quantitatively measuring the optical quality of a lens in a port, the method comprising:

inserting a port in a port tester such that a mirror of the port tester is positioned at a test position with respect to a lens of the port and such that an optical fiber is connected with the port;

generating a light signal;

directing a control portion of the light signal to a power meter to determine a power of the control portion of the light signal;

directing a test portion of the light signal through the port, wherein the mirror reflects the test portion of the light signal back through the port;

directing the reflected test portion of the light signal to the power meter to determine a power of the reflected test portion of the light signal; and

comparing the power of the control portion of the light signal with the power of the reflected test portion of the light signal, wherein the comparison is indicative of the quality of the port being tested.

17. A method as defined in claim 16, wherein inserting a port in a port tester further comprises:

connecting the port with a mirror assembly; and

sliding a fiber assembly of the port tester to a connected position such that an optical fiber is connected with the port.

18. A method as defined in claim 16, wherein generating a light signal further comprises dividing the light signal into a control portion and a test portion, wherein the control portion is substantially equal to the test portion before the test portion passes through the port being tested.

19. A method as defined in claim 16, wherein comparing the power of the control portion of the light signal with the power of the reflected test portion of the light signal further comprises adjusting the test position of the mirror until the comparison between the control portion and the reflected test portion is maximized.

20. A method as defined in claim 19, further comprising determining if the lens of the port being tested is within focal specification by measuring the distance between the mirror of the port tester and the lens of the port.